

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Currently Amended):

A composite material which comprises:

(a) finely divided graphite platelets, wherein a precursor graphite has been expanded by heating for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid from the precursor graphite in a microwave or radiofrequency wave applicator so as to essentially remove the expander chemical and then pulverized to produce the platelets, which platelets consist essentially of a distribution of single platelets most of which are 1 μ m or less than 200 microns in length; and

(b) a polymer having the graphite platelets dispersed therein.

2. (Currently Amended):

A composite material which comprises:

(a) finely divided graphite platelets, wherein a precursor graphite has been expanded by heating for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid and an oxidizing agent from the precursor graphite in a microwave or radiofrequency wave applicator so as to essentially remove the expander chemical and then pulverized to produce the platelets, which platelets are single platelets with a most of which are 1 μ m or less in length less than about 200 microns and have a thickness of about 30 nm or less than about 0.1 microns; and

(b) a polymer having the graphite platelets uniformly dispersed therein, wherein the composite material contains up to about 50% by volume of the graphite platelets.

3. (Currently Amended):

The composite material of Claims 1 or 2, Claim
2 wherein the graphite platelets are present in an amount
so that composite material is electrically conductive.

4. (Original):

The composite material of any one of Claims 1,
2 or 3 wherein the polymer is a thermoplastic or
thermoset polymer.

Claims 5-6. (Cancelled).

7. (Original):

The composite material of any one of Claims 1,
2 or 3 wherein the polymer and the expanded graphite have
been heated together with a radiofrequency wave
applicator.

8. (Original):

The composite material of any one of Claims 1,
2, or 3 wherein the polymer is an epoxy resin.

9. (Cancelled).

10. (Original):

The composite material of any one of Claims 1, or 2 or 3 wherein the polymer is thermoplastic and is selected from the group consisting of polyamides, proteins, polyesters, polyethers, polyurethanes, polysiloxanes, phenol-formaldehydes, urea-formaldehydes, melamine-formaldehydes, celluloses, polysulfides, polyacetals, polyethylene oxides, polycaprolactams, polycaprolactons, polylactides, polyimides, and polyolefins.

11. (Previously Presented):

The composite material of any one of Claims 1, 2 or 3 which contains less than about 8% by weight of the graphite platelets.

12. (Currently Amended):

A method for preparing a shaped composite which comprises:

(a) providing a mixture of a finely divided graphite platelets, wherein a precursor graphite has been expanded by heating for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid from the precursor graphite in a microwave or radiofrequency wave applicator and then pulverized to produce the platelets, which platelets consist essentially of distribution of single platelets most of which are 1 μ m or essentially less than 200 microns in length and a polymer with the platelets dispersed therein; and

(b) forming the shaped composite material from the mixture.

13. (Currently Amended):

A method for preparing a shaped composite material which comprises:

(a) providing a mixture of graphite platelets, wherein a precursor graphite has been expanded by heating for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid and an oxidizing agent from the precursor graphite in a microwave or radiofrequency wave applicator so as to essentially remove the expander chemical and then pulverized to produce the platelets, which particles consist essentially of single platelets with a most of which are 1 μm or less in than about 200 microns length and have a thickness of about 30 nm or less than about 0.1 microns and a polymer with the graphite platelets uniformly dispersed therein, wherein the composite material contains up to about 50% by volume of the graphite platelets;

(b) forming the shaped composite material from the mixture.

14. (Currently Amended) :

The method of Claims 12 or 13 wherein the graphite platelets are ~~is~~—provided in the polymer in an amount sufficient to render the shaped composite electrically conductive.

15. (Original) :

The method of Claims 12 or 13 wherein the polymer is a thermoplastic or thermoset polymer.

Claims 16-18. (Cancelled).

19. (Previously Presented) :

The method of any one of Claims 12 or 13 wherein the polymer is a curable thermoset resin which is mixed with the graphite platelets and cured.

20. (Previously Presented):

The method of Claims 12 or 13 wherein the shaped composite material contains less than 8% by weight of the graphite platelets.

Claim 21. (Cancelled)

22. (Currently Amended):

In a catalytic conversion of an organic compound to hydrogen with a catalytic material deposited on a substrate the improvement in the substrate which comprises a finely divided microwave or radiofrequency wave expanded precursor graphite which has been expanded for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid and an oxidizing agent from the precursor graphite and has been pulverized to graphite platelets most of which are 1 μ m or with a length less in length than about 200 microns and a thickness of less than about 0.1 microns.

23. (Currently Amended):

A process for producing graphite platelets which comprises:

(a) expanding by heating a precursor graphite intercalated with a chemical which expands upon heating for 5 minutes or less at a power so as to have no significant remaining order between the platelets as seen by an x-ray diffraction pattern and to remove by boiling an expander chemical comprising a fuming inorganic oxy acid from the precursor graphite in a radiofrequency wave or microwave applicator so as to essentially remove residual amounts of the expander chemical to produce an expanded graphite; and

(b) pulverizing the expanded graphite to produce the platelets so that are essentially a distribution of all of the individual platelets most of which are 1 μ m or less than 200 microns in length, 0.1 micron in thickness.

Claim 24. (Cancelled).

25. (Currently Amended) :

The process of Claim 23 ~~any one of Claims 23 or~~
24 wherein the expanding is by the microwave applicator.

26. (Previously Presented) :

The composite material of Claim 1 wherein the expanded and pulverized graphite particles are grafted with acrylamide.

27. (Previously Presented) :

The method of Claim 12 wherein the expanded and pulverized graphite platelets are grafted with acrylamide.

28. (Currently Amended) :

The process of Claim 23 wherein the expanded and pulverized graphite platelets are ~~is~~—grafted with acrylamide.

29. (New) :

The composite material of Claims 1 or 2, wherein the precursor graphite has been expanded by heating at a power of at least 1040 Watts.

30. (New) :

The method of Claims 12 or 13, wherein the precursor graphite has been expanded by heating at a power of at least 1040 Watts.

31. (New) :

The catalytic conversion of Claim 22, wherein the precursor graphite of the substrate has been expanded by heating at a power of at least 1040 Watts.

32. (New) :

The process of Claim 23, wherein the precursor graphite has been expanded by heating at a power of at least 1040 Watts.